Remarks

The Office Action dated May 30, 2008 has been carefully considered. Reconsideration of the claims in view of the following remarks is respectfully requested.

Claim Rejections

In the Office Action, claims 1-3, 5, 6, 8-10, 12-14, and 16-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over US 5,985,434 to Qin et al. in view of WO 00/52087 to Hähnle et al.

The process according to claim 1 may be divided into the following two essential parts:

i. forming an aqueous composition comprising one or more polymers, crosslinkers, blowing agents, and surfactants; and

ii. heating the formed aqueous composition.

In contrast to this, the process for the preparation of an absorbent foam described by Qin et al. is different for the following reasons.

First, Qin et al. teach that "The absorbent foams of the present invention are generally hydrophilic as prepared and therefore generally do not require any subsequent treatment to make them hydrophilic. This is in contrast to many absorbent foams known in the art in which the polymeric material of the foam is not inherently hydrophilic but is rendered hydrophilic by a suitable treatment, such as by the addition of a surfactant" (Qin et al column 9, lines 41-48). From this, a person skilled in the art would not have been motivated to make use of a surfactant because such a use would be in contrast to the absorbent foams as taught in Qin et al.

Therefore, Qin et al. does not teach or suggest the use of surfactant.

Second, as already stated by the Examiner, Qin et al. do not teach that the content of water (A1) is adjusted to not more that about 15wt%

Third, Qin et al. teach that it is essential for the preparation of the absorbent foam to freeze the polymer or monomer solution below the freezing point (Qin et al. column 9, lines 51-64) such that the solvent is in a state of a solid phase (Qin et al. column 12, lines 8-11) and wherein the polymer and the crosslinking agent, if present, form an essentially continuous matrix which will become substantially encased by the frozen solvent, forming an essentially uniform bicontinuous structure (Qin et al. column 12, lines 14-24). In addition, the Qin et al. process necessarily needs a suitable vacuum to sublime the frozen solvent (Qin et al., column 13, lines 43-56) forming a polymeric matrix to achieve a foam structure (Qin et al., column 14, lines 6-10).

As regards to Hähnle et al., their teaching pertains to the polymerization of a foamed solution of a monomer but not the foaming and crosslinking of an aqueous composition containing one or more polymers as claimed in claim 1.

In addition, from the range of the water content of 1-60% by weight as given by Hähnle et al., a specific content of water of not more than about 15wt% cannot be derived.

Therefore, following the teachings of Qin et al. and Hähnle et al., a person skilled in the art would – without knowledge of the present application – make use of a process for the preparation of water-absorbent, foam-type polymer structures wherein a solution comprising a polymer or a monomer and a crosslinking agent, but not containing a surfactant, is foamed by freezing and then vacuumized to form a continuous matrix or a uniform bicontinuous structure,

respectively, possessing an unspecific water content layer somewhere between 1 to 60% by weight.

Accordingly, the process according to claim 1 is not obvious over Qin et al. in view of Hähnle et al.

Claim 2

As set forth in the remarks for claim 1, Qin et al. does not teach the process according to claim 1, and it is clear that dependent claim 2 is not obvious over Qin et al. in view of Hähnle et al.

Claim 3

As set forth in the remarks for claim 1, Qin et al. does not teach the claimed process according to claims 1 or 2. For this reason, the teaching of Hähnle et al. according to which the absorbent foam is prepared with a density in the range of 0.05 to 0.5 does not give any further contribution that would lead to the process according to claim 3, which is dependent on claim 1. It is therefore clear that claim 3 is not obvious over Qin et al. in view of Hähnle et al.

Claims 5 and 6

A polymer which is obtained by a process according to Qin et al. is not the same polymer as obtained by a process of claim 1, which is quite different from the process according to Qin et al. In this regard, reference is made to the comments for claim 1.

Therefore, a water-absorbent, foam-type polymer structure obtainable by a process according to claim 1 cannot be obvious over Qin et al. Moreover, Qin et al. is silent with regard to the properties of their polymer as to rate of absorption, maximum absorption capacity, CRC, mean pore size, and mean pore density.

Claims 8 and 17

For the same reasons set forth under claims 5 and 6, claims 8 and 17 are not obvious over Qin et al.

Claims 9, 10, and 14

As far as the composite, claim 9 depends on claim 8 which further depends on claim 5 which is dependent on claim 1. Because the process of claim 1 is not obvious over Qin et al. and in view of Hähnle et al., claim 9 cannot be obvious over Qin et al. in view of Hähnle et al.

Claim 10 is dependent on claim 9 so that claim 10 cannot be obvious over Qin et al. and in view of Hähnle et al. The same holds true for claim 14 which refers to claim 9.

Claims 12, 13, and 18

Since claim 12 depends on claim 8, and claim 13 is dependent on claim 12, the same arguments mentioned under claims 9, 10 and 14, can be applied with the result that neither claim 12 nor claim 13 is rendered obvious over Qin et al. and in view of Hähnle et al. Claim 18 is directed to a composite obtainable by a process according to claim 12.

Hence, following the reasons mentioned above, claim 18 is not obvious over Qin et al. and in view of Hähnle et al.

Claim 16

Claim 16 is directed to a chemical product comprising a composite according to claim 5 which in turn depends on claim 1. As set forth above, claim 1 is not obvious over Qin et al. and in view of Hähnle et al. Hence, claim 16 cannot be obvious over Qin et al. and in view of Hähnle et al.

In the Office Action, claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over US 5,985,434 to Qin et al. in view of WO 00/52087 to Hähnle et al. as applied to claim 1, and further in view of US 6,001,911 to Ishizaki et al.

Dependent claim 4 is directed to the process of claim 1. First, it has been set forth that Qin et al. does not disclose the process of claim 1. As set forth above, Qin et al. process is different from that of claim 1. Second, the Examiner fails to set forth to which extent Hähnle et al. may be relevant to claim 4 under 35 USC 103(a).

Third, Ishizaki et al. does not disclose a process according to claim 1 but a process comprising polymerization of monomers in the presence of both a crosslinking agent and a foaming agent (Ishizaki et al., column 3, lines 52-62, column 8, lines 42-50) which is comparable to that of the Hähnle et al. process.

Since Ishizaki et al. does not make any further contribution to the teachings of Qin et al. and Hähnle et al., claim 4 is not obvious over Qin et al. in view of Hähnle et al. and further in view of Ishizaki et al.

In the Office Action, claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over US 5,985,434 to Qin et al. in view of WO 00/52087 to Hähnle et al. as applied to claim 1, and further in view of US 6,033,769 to Bruggermann et al.

Process claim 11 is dependent on process claim 9. As already set forth, claim 9 depends on claim 8, which depends on claim 5, which depends on claim 1. As the process claim 1 is quite different from that according to Qin et al, and not obvious over Qin et al., the teaching of Bruggermann et al. is not suitable to make claim 11 obvious in view of Qin et al. Furthermore, the disclosure of Bruggermann et al. has nothing to do with the process of the present claims, but

teaches away from claim 11. Hence, neither Qin et al. nor Hähnle et al., nor Bruggermann et al. together disclose claim 11.

In the Office Action, claim 19 is rejected under 35 U.S.C. 103(a) as being unpatentable over US 5,985,434 to Qin et al. in view of WO 00/52087 to Hähnle et al. as applied to claim 1, and further in view of US2001/0024716 to Chen et al. Process claim 19 depends on claim 1, and further specifies blowing agents being selected from inorganic salts or organic compounds that are capable of decarboxylation.

As previously set forth, the process of the present invention is very different than that of Qin et al. Therefore, the only additional teaching of Chen et al. according to which the blowing agent may be citric acid mixture to be used to prepare an absorbent foam cannot make process claim 19 obvious over Qin et al. in view of Hähnle et al., and further in view of Chen et al.

In the Office Action, claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over US 5,985,434 to Qin et al. in view of WO 00/52087 to Hähnle et al.

As already recognized by the Examiner, Qin et al. does not disclose the content of water to be adjusted to not more than 15% by weight of the polymer structure. However, Hähnle et al. discloses water content in the wide range of 1-60% by weight which means nothing more than a vagueness which does not enable a person skilled in the art to derive claim 7 of the present invention. Hence, a first teaching of Qin et al. cannot be corrected by a second vague disclosure of Hähnle et al. so that the only conclusion from this situation is that claim 7 is not obvious over Qin et al. in view of Hähnle et al.

The Examiner sets forth that the claimed effects and physical properties would implicitly be achieved by a composition with all the claimed ingredients. However, these arguments lack basis because 1) Qin et al. does not teach the polymer structure obtainable by a process according to claim 1, and 2) the reference(s) do not teach all the process limitations as set forth above. Hence, claim 7 is not obvious over Qin et al. in view of Hähnle et al.

Conclusion

In light of the remarks presented herein, Applicants submit that the present application is in condition for allowance, and such action is respectfully requested. If, however, any issues remain unresolved, the Examiner is invited to telephone Applicant's counsel at the number provided below.

Respectfully submitted,

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